

HABITAT RESTORATION AND MONITORING OF AN URBAN SHEARWATER COLONY AT THE FREEMAN SEABIRD PRESERVE (2008 - 2015)



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Road Map

- I. Introduction
- II. 2008-14 History
- III. 2015 Update
- IV. 2016 Prospects
- V. Take Home



Wedge-Tailed Shearwater
Puffinus pacificus

I. Introduction: The Character



'U au' Kani

Wedge-Tailed Shearwater *Puffinus pacificus*

Numerous and widely distributed species



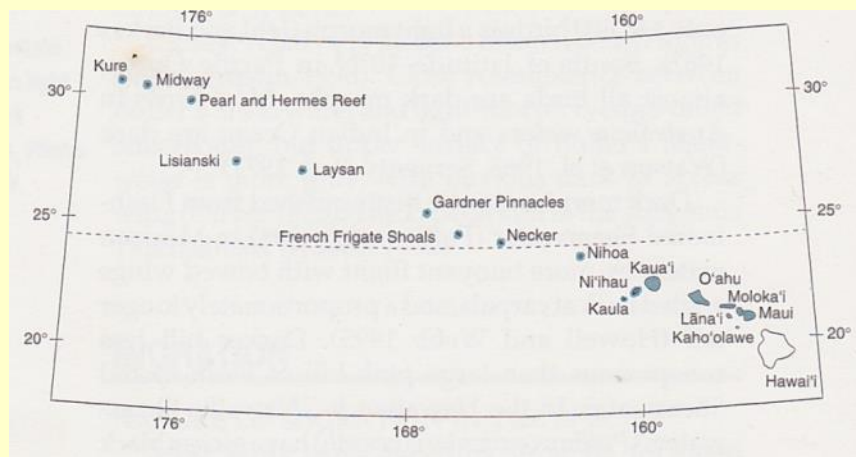
Pacific & Indian Ocean

Tropical / Subtropical

Latitude: 35 N - 35 S

Breeds on oceanic islands
and on the east and west
coasts of Australia

(Onley & Scofield 2007)



Breeding Range: Maui to Kure
Population: ~1.3 M (Hawaii)

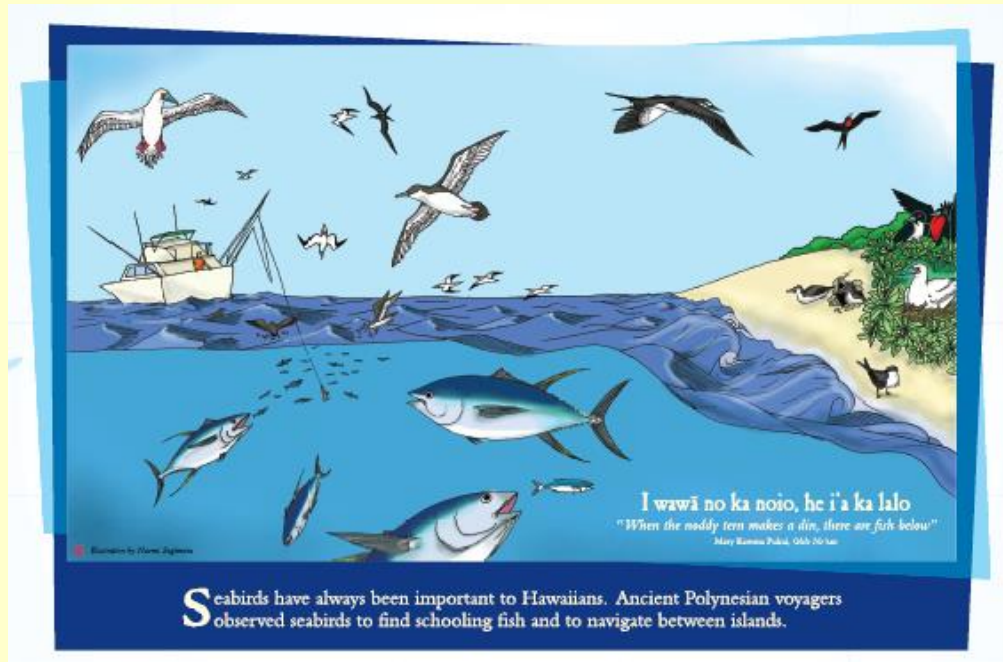
~ 2.2 M (Other Pacific)

~2.3 M (Australia)

~1.4 M (Indian Ocean)

(Whittow 1997)

Life History: Foraging At Sea



Abundant
constituent
of bird piles

Associated with
Skipjack Tuna

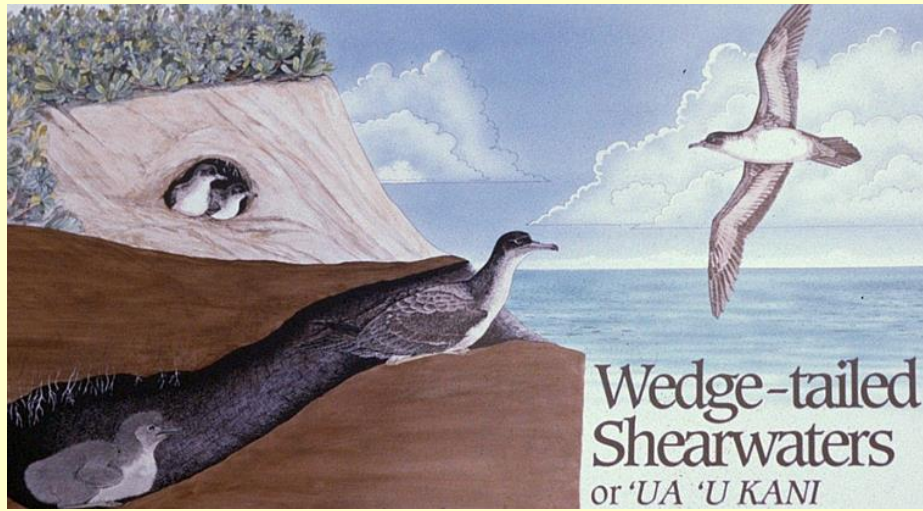
Dive to 22 m

Mean depth:
 6.2 ± 6.8 m (n=8)

Mean duration:
 16 ± 15 s (n=8)



Life History: Breeding On Land



Colonial breeders

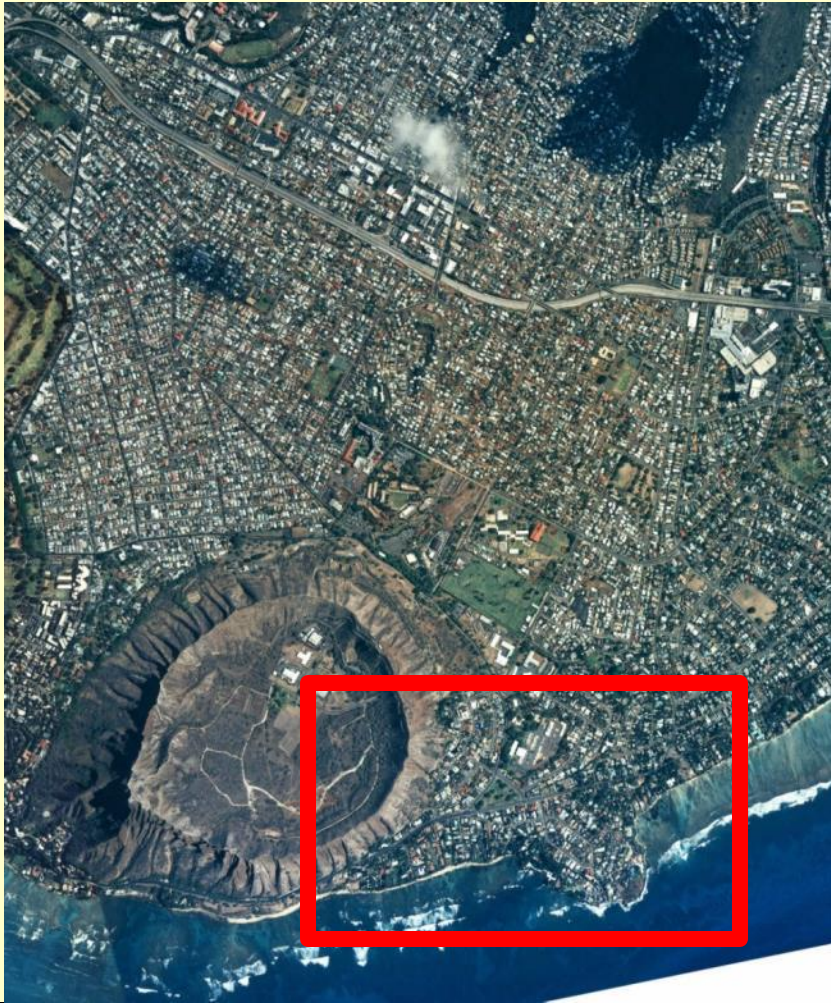
Burrow nesters



Susceptible to land predators and human trampling



Freeman Seabird Preserve (FSP)



A Heterogeneous Landscape



Home to Wedge-tailed Shearwaters



II. History: Establishment

October 2007



For the Protection of Hawaii's Native Wildlife
HAWAII AUDUBON SOCIETY

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CONTACT:

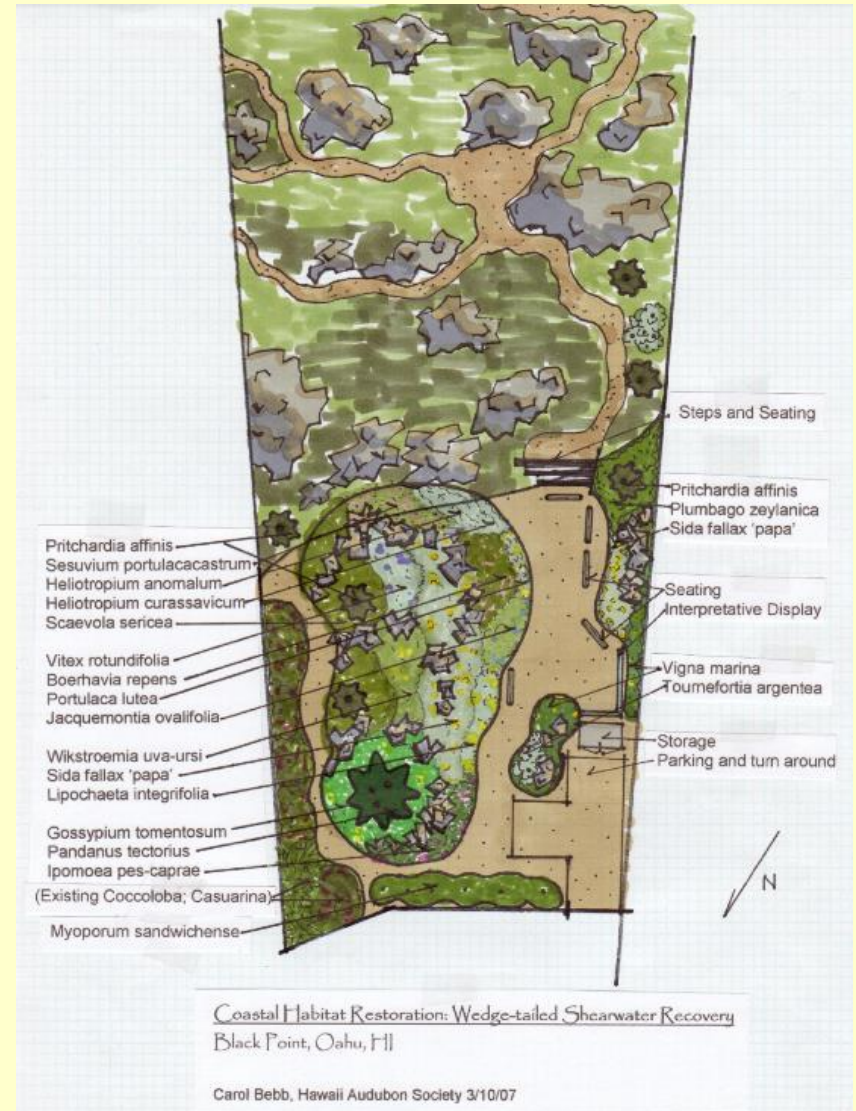
WENDY JOHNSON - 734-7985 (H)
JOHN HARRISON - 595-8373 (H) 780-1223 (Cell)

HAWAII AUDUBON SOCIETY RECEIVES GIFT OF COASTAL LAND Black Point site home to protected native Wedge-tailed Shearwater seabird colony

HONOLULU: OCTOBER 17, 2007 — An announcement was made at the Hawai'i Audubon Society's Annual Awards Dinner on Monday, October 15, of the gift of a one-acre Black Point site that is home to a large colony of protected native Wedge-tailed Shearwater (*Ua'u Kani*). Mr. and Mrs. Houghton Freeman deeded the property to the Society for the purpose of establishing the *Freeman Seabird Preserve* for the protection of native birds, plants and habitat. The Officers and Directors of the Hawai'i Audubon Society are deeply grateful to the Freeman family for their selfless generosity and commitment to support our natural resources conservation and education mission.



October 2008





2007

History: 2009 - 2010

On-site habitat enhancement at FSP began in 2009.

Installation of landscaping features, native plants, and irrigation system completed in January 2010.



History: 2010 - 2015



Planting Native Vegetation



Ilima, Tribulus, Naupaka, Jacquemontia

Improving Breeding Habitat on Terrace





2013

2014 -16: Built 50 Artificial Nests

- Excavated Roof-Tile Nests
- Planted Naupaka for Shade



Management and Monitoring

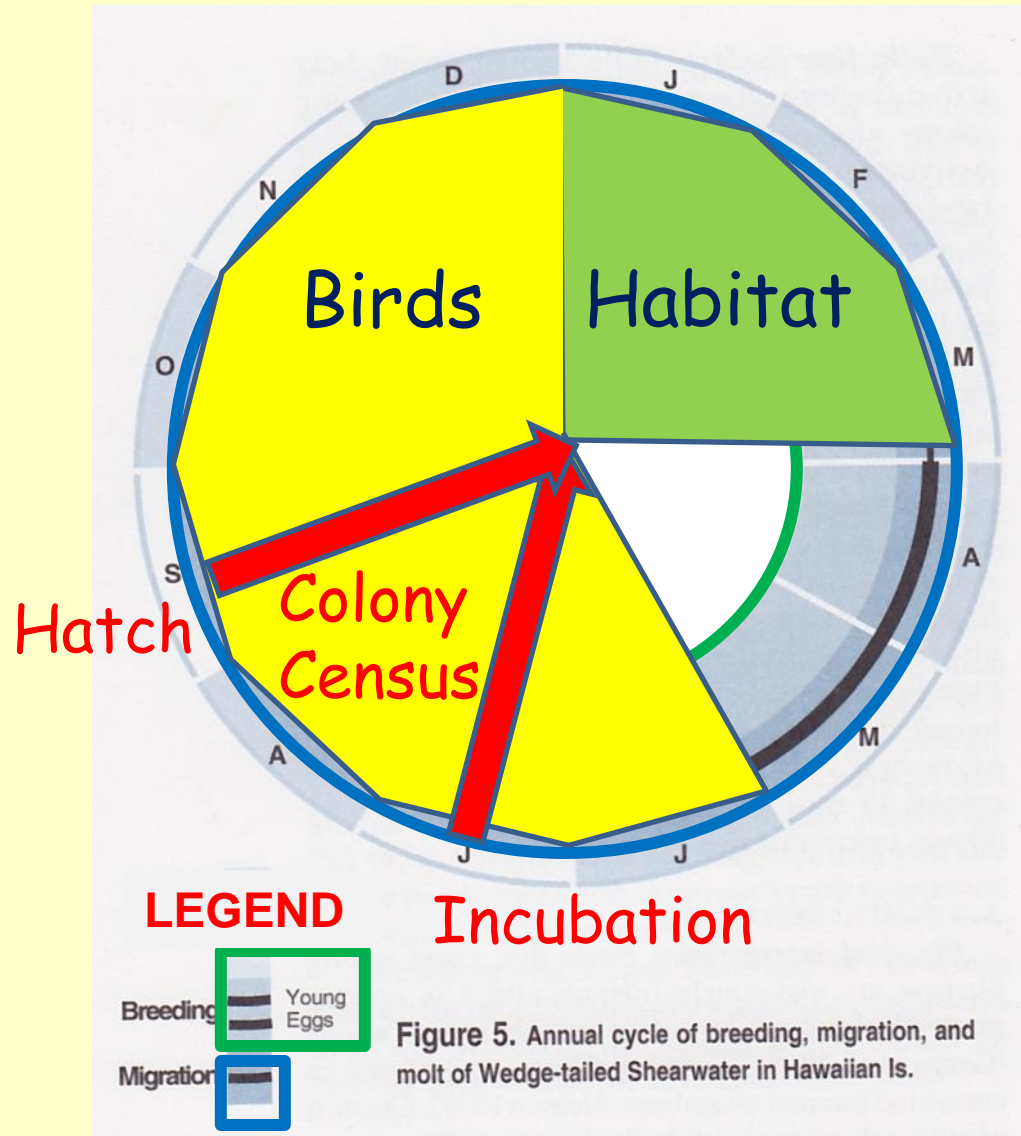


Figure 5. Annual cycle of breeding, migration, and molt of Wedge-tailed Shearwater in Hawaiian Is.

(Whittow 1997)



January - March: Weeding & Nest Building



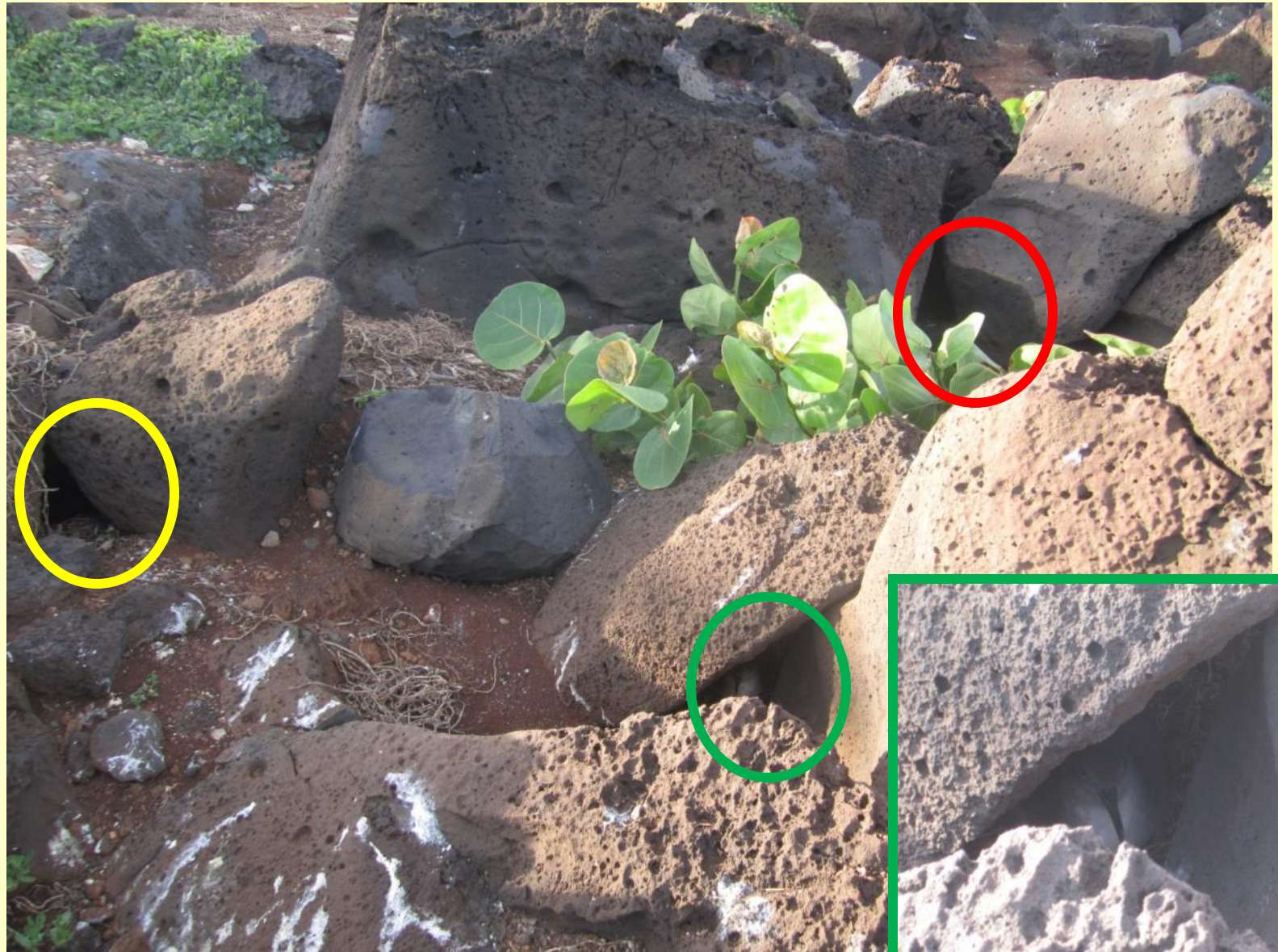
Colony Counts - July & September



3-Dimensional Hide-and-Seek



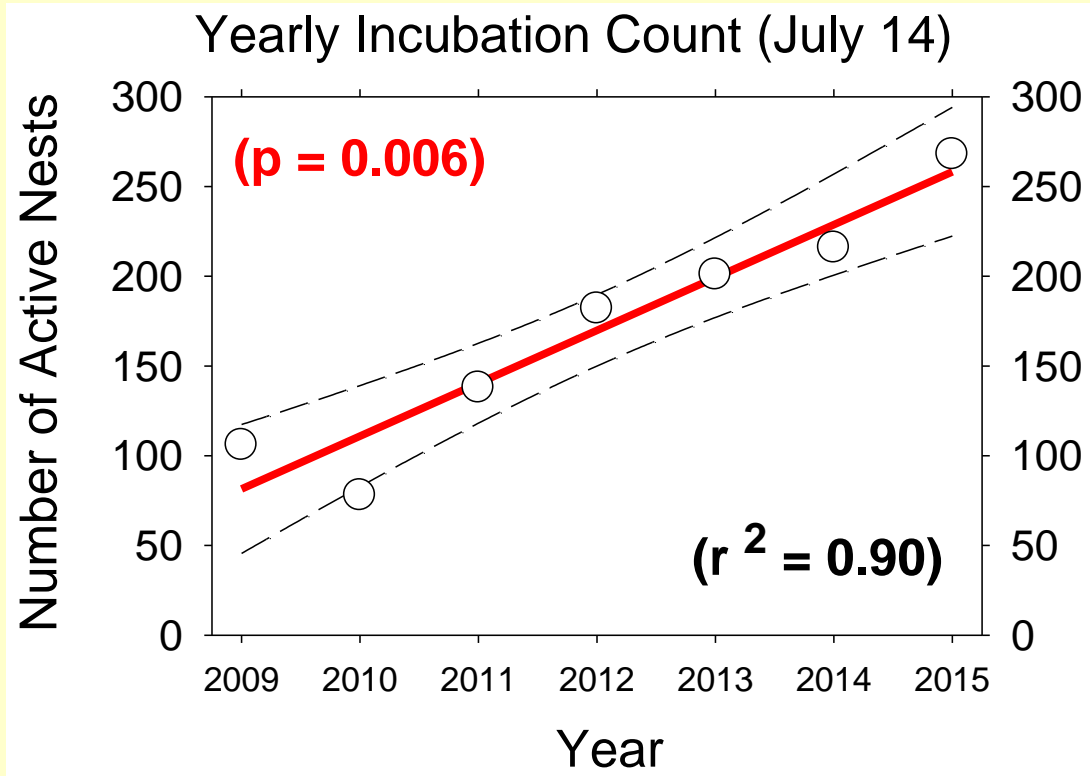
Where is the Bird?



July Census: Increasing Trend

Average yearly increase:

29.5 +/- 10.3 S.D. nests



Census of Nesting Sites

- 2014 Nests: **37% Artificial**, **63% Natural**



Lots of Available Nesting Spaces



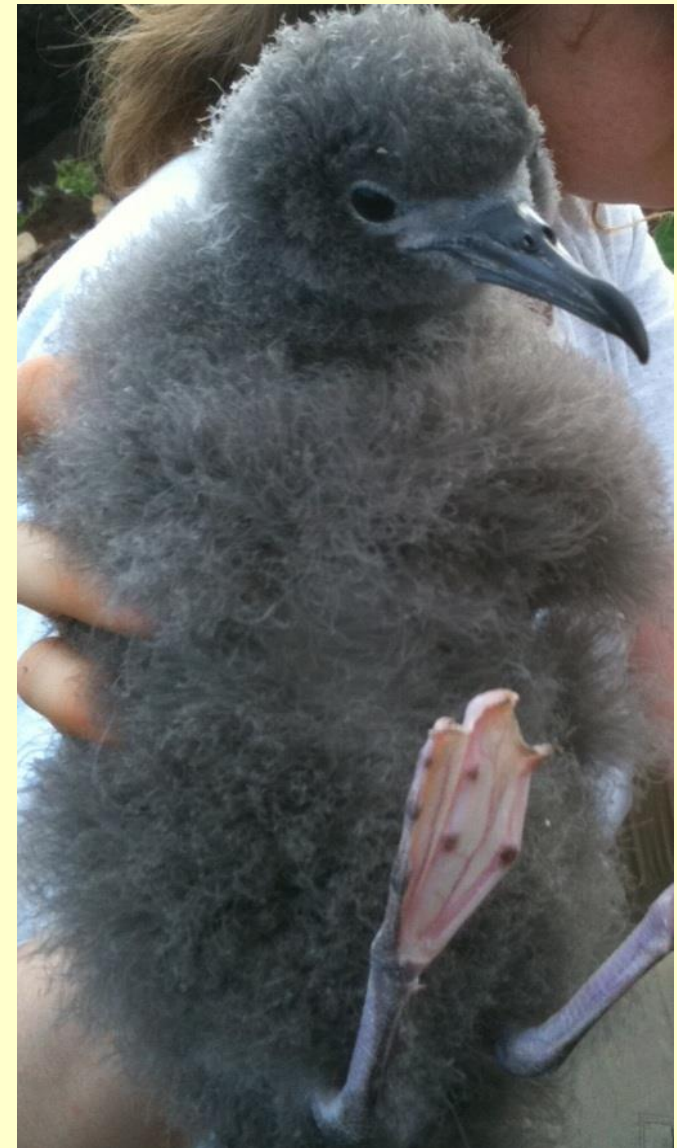
III. Monitoring - 2015 Update

➤ Monitoring Metrics

- mid July:
Mark 30 - 40 nests
- mid July - late August:
Weekly nest checks
- mid August - late November:
Weekly chick mass / size

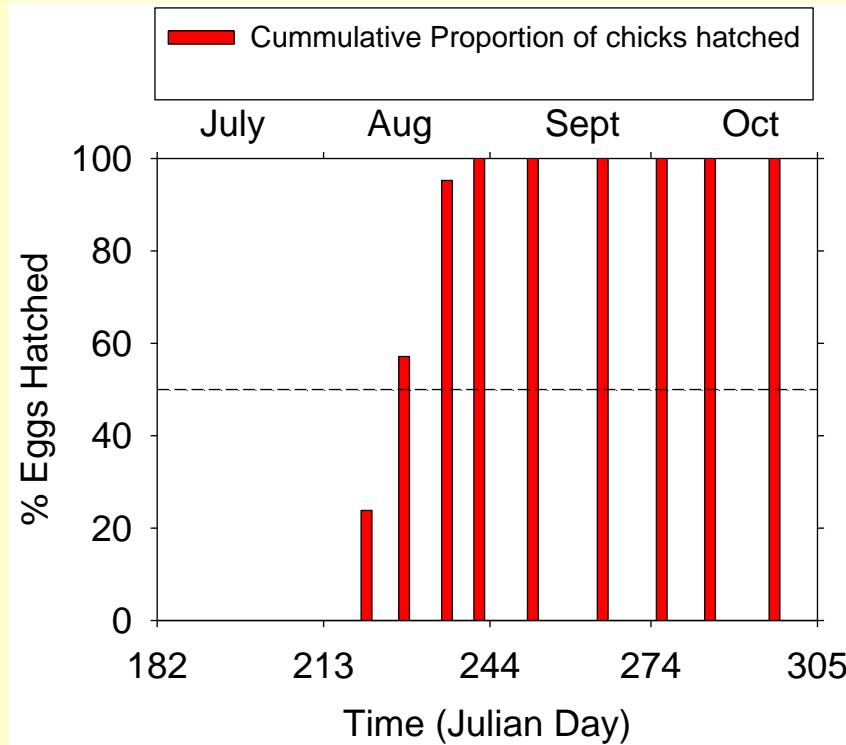
➤ Time Series

- 7 years: 2009 - 2015



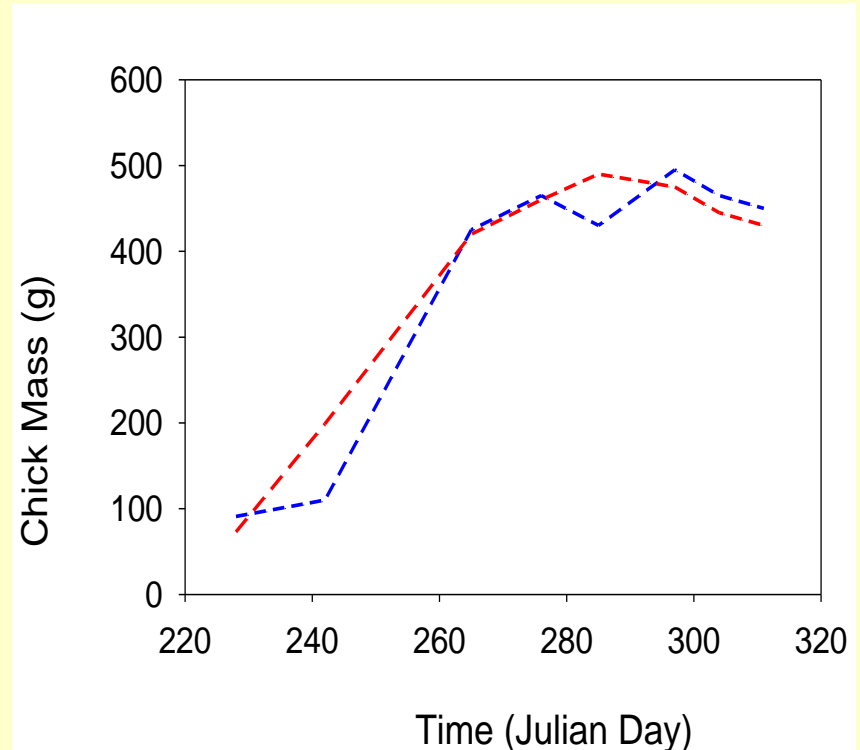
Quantifying Shearwater Productivity

➤ Timing of Hatching:



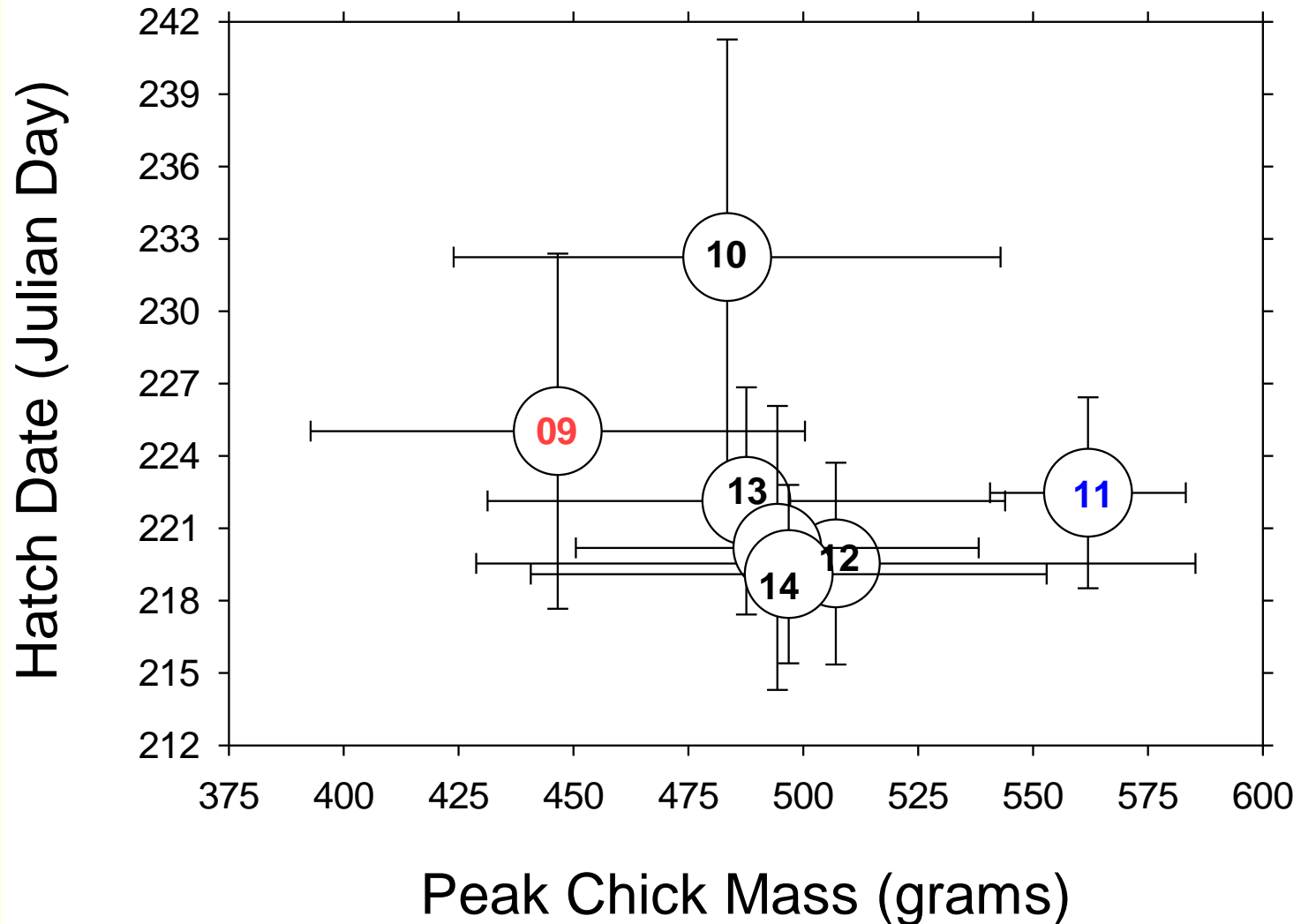
When did 50% of chicks hatch?

➤ Chick Mass:

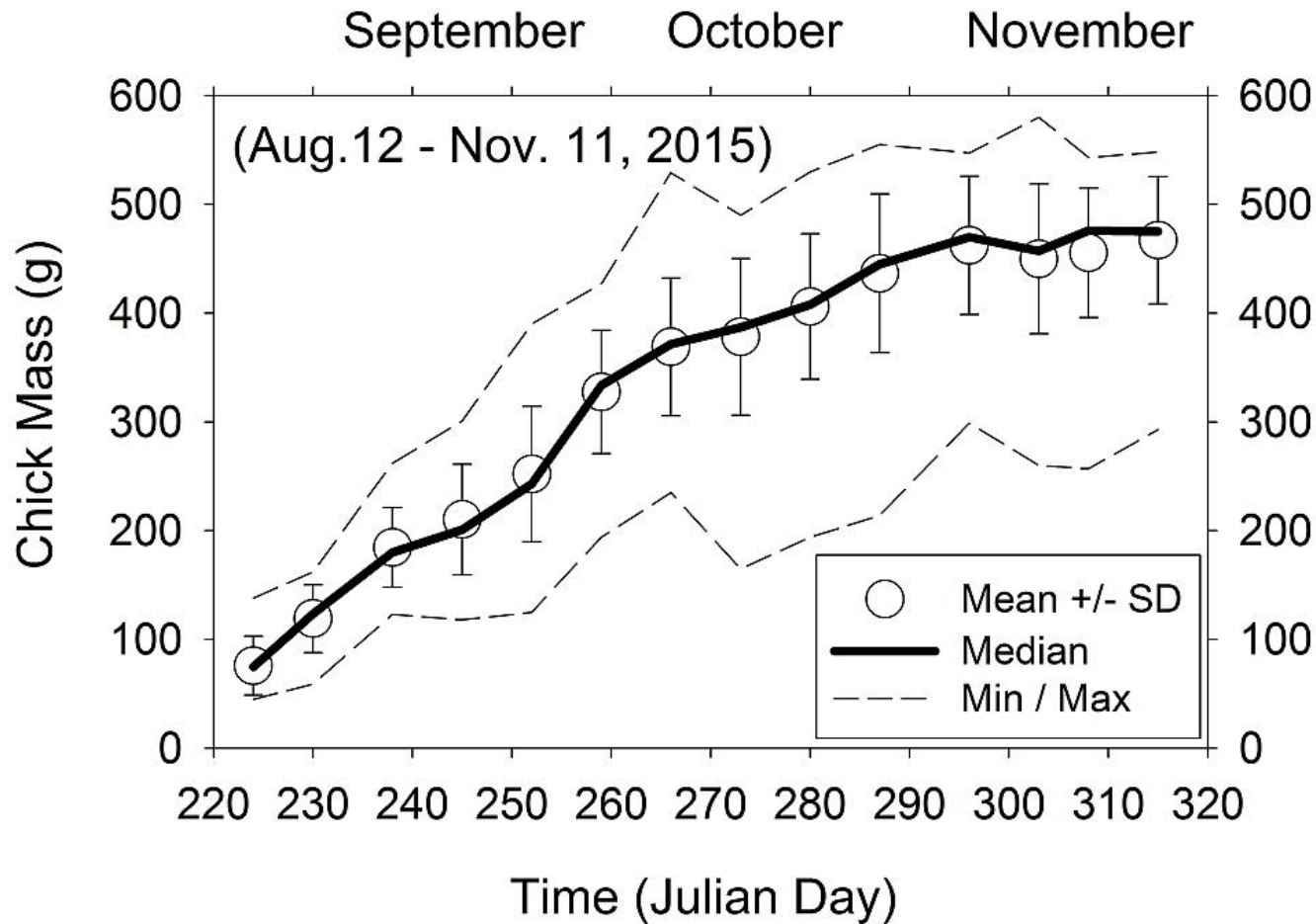


What was the peak mass of the chicks?

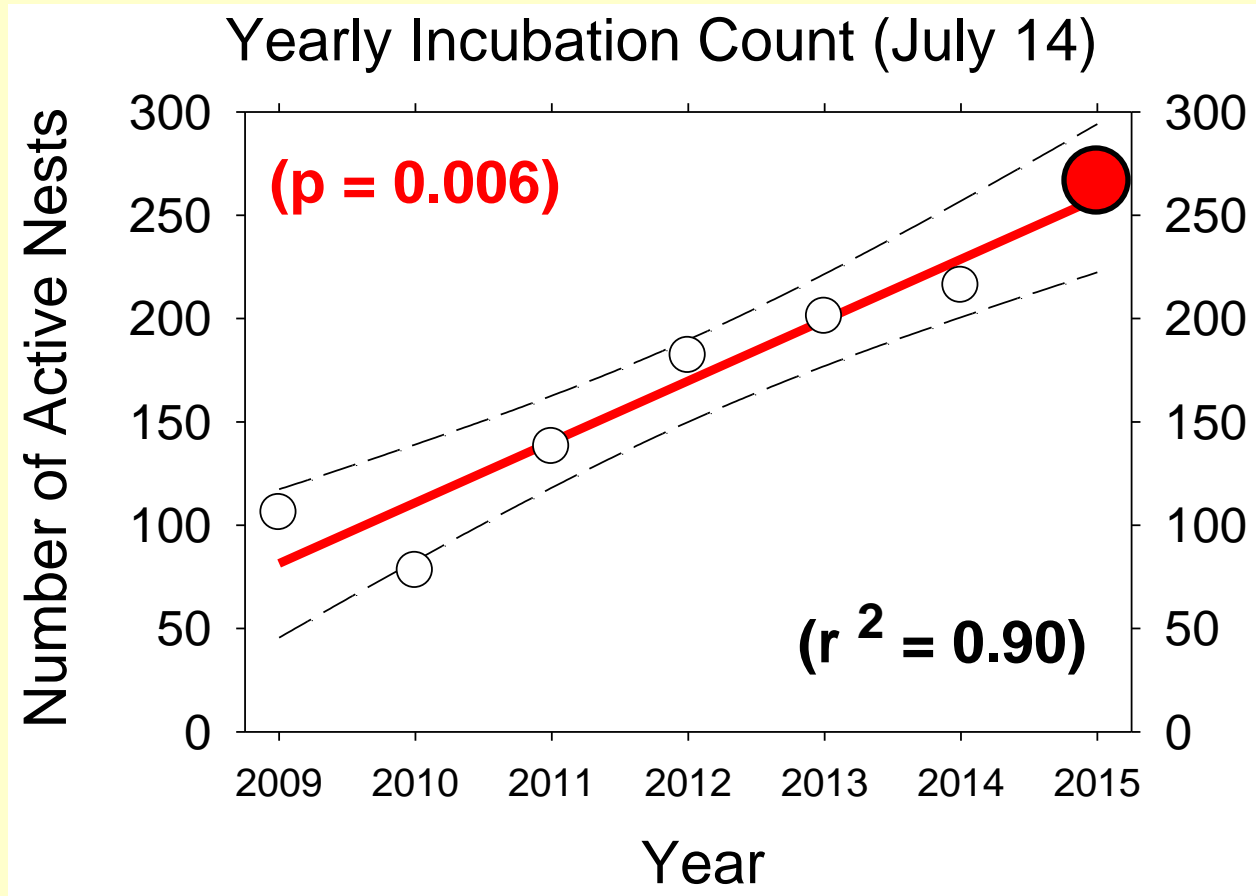
2015 Update - Chick Hatching and Mass



2015 Update - Chick Growth Curve

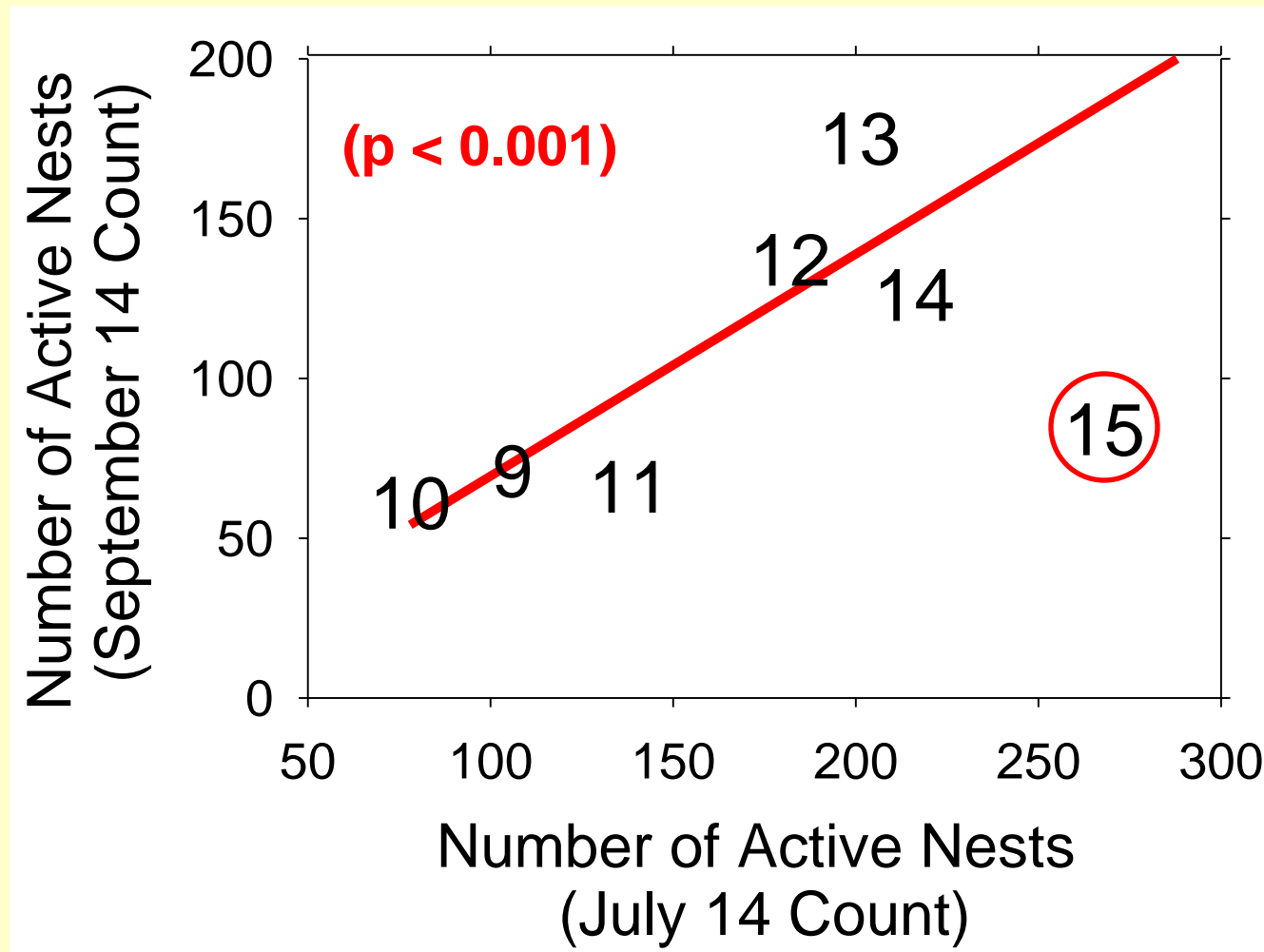


2015 Update - July Colony Count



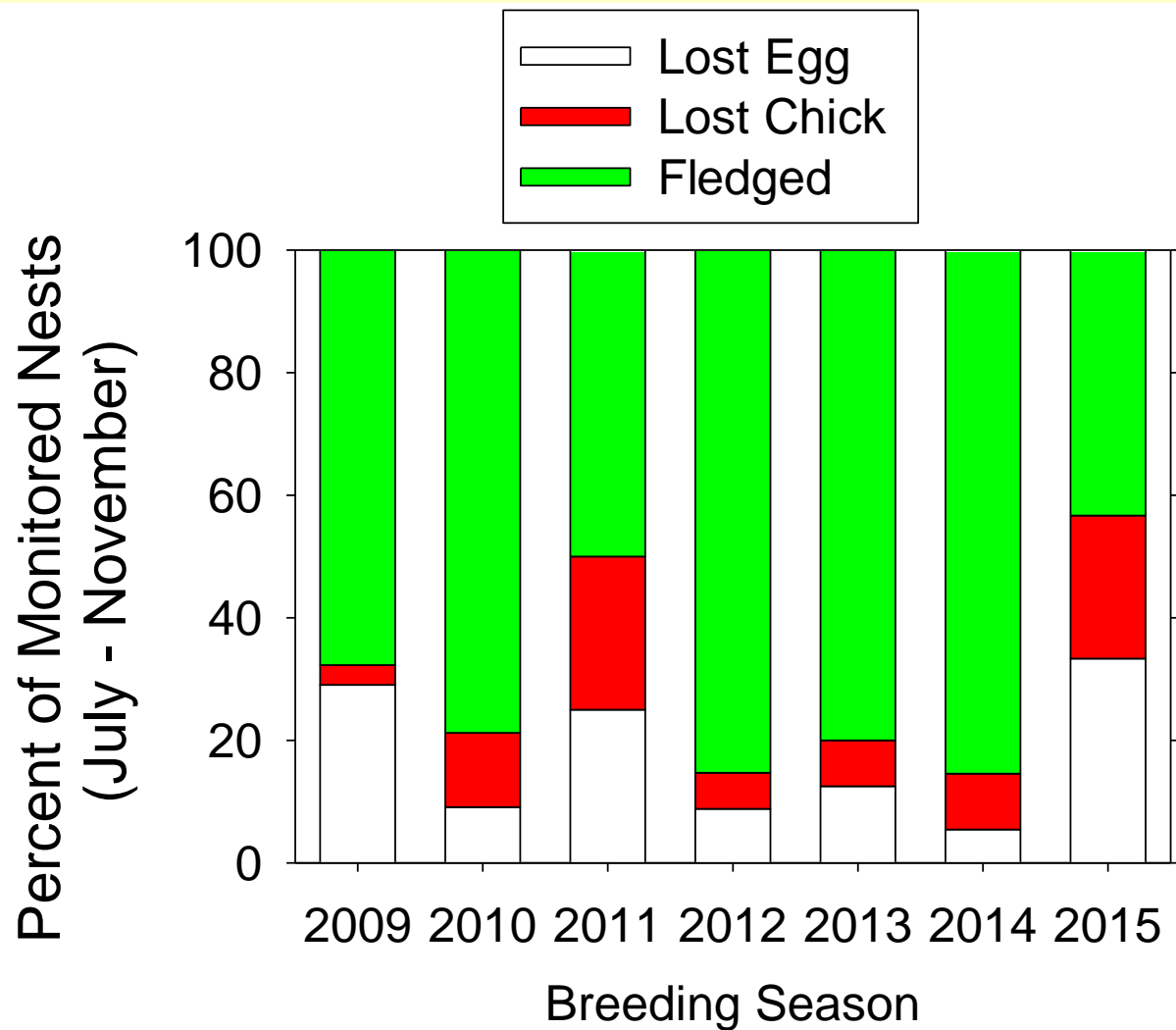
2015 colony-wide census during incubation period yielded 268 nests, 24% higher than 2014 annual count (216 nests)

2015 Update - High Loss of Nests



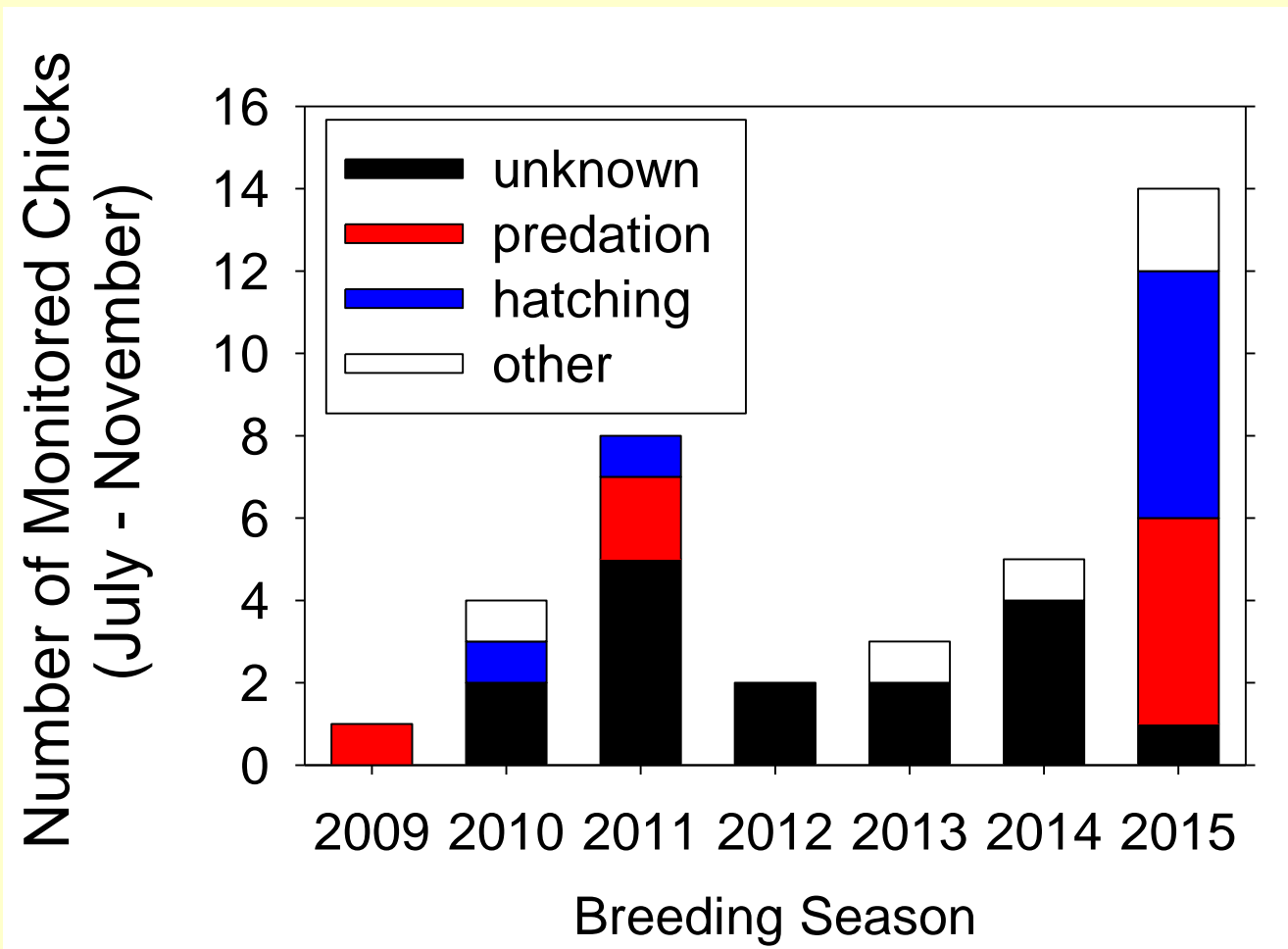
Peak incubation count (July) followed by low count of 92 nests (Sept.): a loss of 65.7% of the nests

2015 Update - High Loss of Eggs



Peak incubation count (July) followed by low count of 92 nests (Sept.): a loss of 65.7% of the nests

2015 Update - High Loss of Chicks

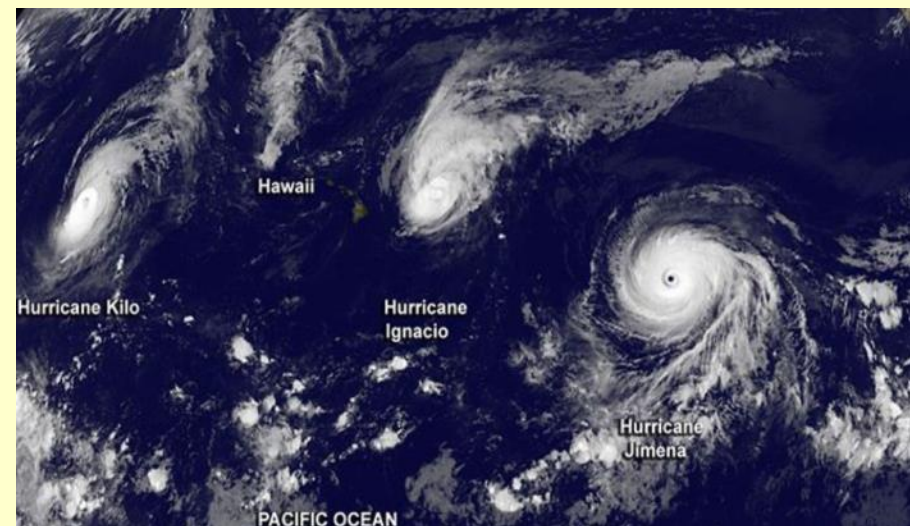
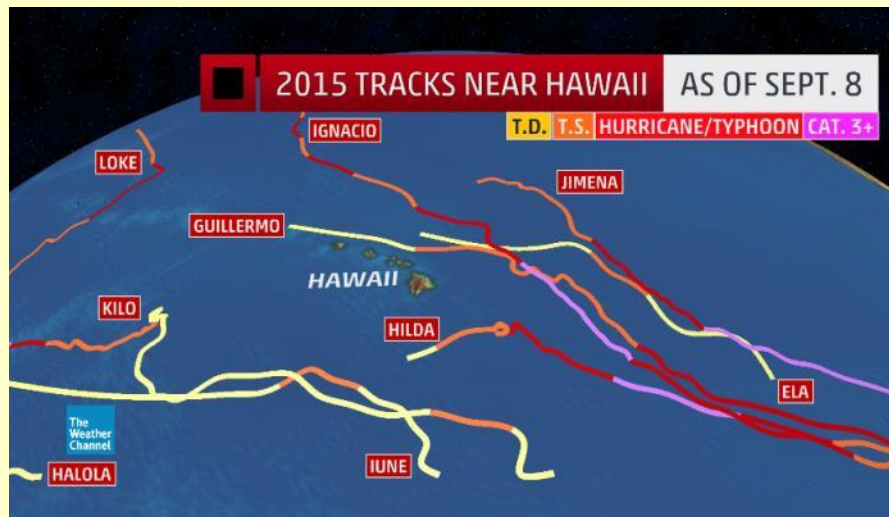


High mortality in 2015 caused by predation and natural causes (high loss of eggs and pipping chicks)

What Happened in 2015 ?

On average, between 4 and 5 tropical cyclones occur in Central Pacific yearly, with number ranging from 0 to 11.

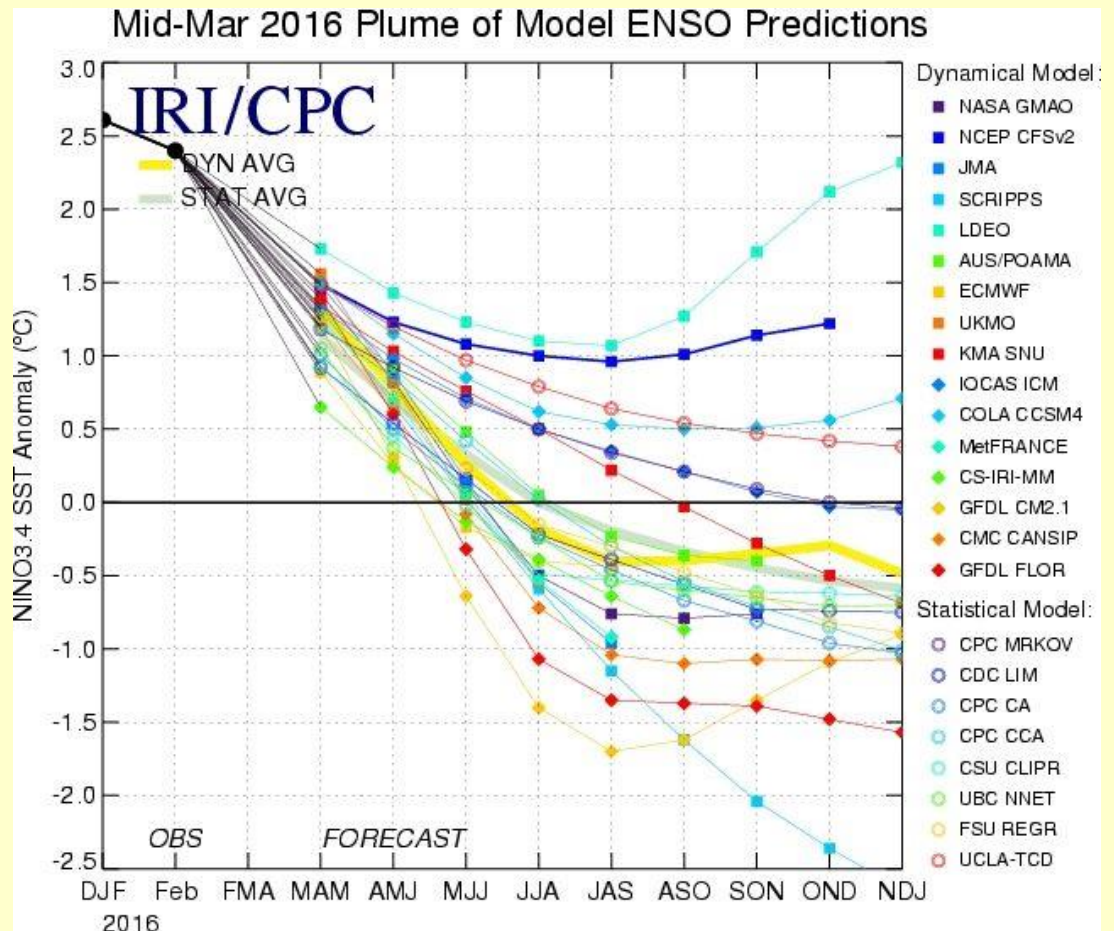
In 2015, there were 8 hurricanes and 7 Central Pacific tropical storms. Hurricanes Guillermo and Hilda affected Hawai'i in August, and hurricane Ignacio passed by in early September (www.prh.noaa.gov/cphc).



IV. What Will 2016 Look Like ?

El Niño will weaken through 2016 and transition to neutral conditions during late spring / early summer. Unknown if La Niña will follow (NOAA Climate Prediction Center)

Based on models, anticipate that 2016 will be another "average" year for Wedge-tailed Shearwater Productivity.



What Will 2016 Look Like ?

➤ Predator Monitoring

- ongoing camera vigilance
- trapping, if needed



V. Take Home Lessons



A Place of Great Beauty



Home to a Growing Number of Shearwaters



A Field Classroom



Egg Laying and Incubation Duration



'ELEPAIO

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Wedge-tailed Shearwater breeding phenology at the Freeman Seabird Preserve, O'ahu, Hawai'i

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Online Materials



Shearwater Populations / Habitat Restoration

Available online: www.freemanseabirdpreserve.com/

Keep your eye on the Birds



www.facebook.com/FreemanSeabirdPreserve

Thanks

To all who have contributed
to the restoration of the
Freeman Seabird Preserve

Funders and collaborators



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